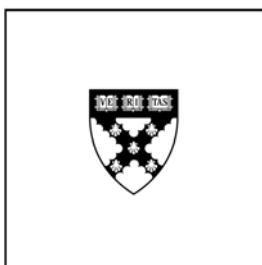


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Learning from the *Kursk* Submarine Rescue Failure: the Case for Pluralistic Risk Management

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Learning from the *Kursk* Submarine Rescue Failure: the Case for Pluralistic Risk Management

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Abstract

The *Kursk*, a Russian nuclear-powered submarine sank in the relatively shallow waters of the Barents Sea in August 2000, during a naval exercise. Numerous survivors were reported to be awaiting rescue, and within a week, an international rescue party gathered at the scene, which had seemingly possessed all that was needed for a successful rescue. Yet they failed to save anybody. Drawing on the recollections and daily situational reports of Commodore David Russell, who headed the Royal Navy's rescue mission, and on Robert Moore's (2002) award-winning book *A Time to Die: The Kursk Disaster*, the paper explores how and why this failure—a multiparty coordination failure—occurred. The *Kursk* rescue mission also illustrates a key issue in multiparty risk and disaster management, namely that the organizational challenge is to enable multiple actors and subunits with competing and often conflicting values and expertise to establish a virtual, well-aligned organization. Organizational structures that can resolve evaluative dissonance, and processes that enable such a resolution, have been proposed in various literatures. Attempting to synthesize relevant works on pluralistic control and collaborative heterarchies, this paper proposes the foundations of what might be called *pluralistic risk management*, and it examines its conditions of possibility, in light of the lessons of the *Kursk* submarine rescue failure.

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Learning from the *Kursk* Submarine Rescue Failure: the Case for Pluralistic Risk Management

During a military exercise in August 2000, a state-of-the-art Russian nuclear submarine, the *Kursk*, sank in the Barents Sea, triggering global media attention and an international rescue effort. In addition to Russia's Northern Fleet, two other organizations got involved in the rescue operation: the UK Submarine Rescue Service and a Norwegian offshore-diving company. Between them, these three parties seemingly *had* all that was needed to rescue the trapped sailors, yet the entire crew was lost. How did this happen? In this paper, focusing on the multiparty "virtual organization" formed by Russian, British, and Norwegian forces during the *Kursk* rescue mission, we set out to explore the organizational, cultural and structural origins of coordination failure. Then, reflecting on the limited ability of traditional, diagnostic risk management controls to address the demands of pluralistic situations, we call for the inclusion of pluralistic control principles into the risk-management practices of complex, multiparty organizations.

All too often, we think we can solve risk and crisis-management problems by finding the right technical solutions. But because participants in such situations often disagree on the guiding principles, there is also a need for leadership to reconcile conflicting values and objectives. The organizational issue that the *Kursk* rescue failure raises is this: how and under what conditions can coordination be brought about and engineered ("designed")? Drawing on the works of organizational design researchers, such as Robert Simons' *Levers of Organization Design*, the answer is that there are indeed several organizational levers that may produce the requisite constellation of resources, accountabilities, interactions and mutual commitment. Simons in particular argues that skillful managers may adjust certain 'levers of organization design', but other management theorists warn us about the contingent nature of organizations: there are severe limitations to what agents can achieve by design. Thus the oft-cited differences between managers 'espoused' versions of how organizations and action should unfold, and the troubling divergences, dissonance and actual 'theories-in-use' that only reveal themselves in action (Argyris, 1995).

The *Kursk* rescue mission highlights another issue that often gets in the way of the orderly, top-down execution of even the best-laid plans: the existence of "multiple evaluative principles". From an organizational design perspective, the co-existence of multiple evaluative principles undermines top-down, hierarchical structures and necessitates an alternative organization, an ideal type that David Stark calls the "heterarchy": an organizational form in which units are laterally accountable according to diverse principles of evaluation (Stark, 2009). Heterarchies foster "a sense of dissonance" and breed tension – but they are not necessarily dysfunctional. This is because the co-existence of multiple value systems can create productive tension, and be the source of innovation (Hutter and Stark, forthcoming).

This raises the question of how to create collaborative heterarchies, that is, how to enable organizations consisting of multiple parties with competing and often conflicting values and expertise, to orchestrate coordinated action? In the case of the *Kursk* rescue mission, many commentators attributed the apparent tension to politics (assuming the Russian Navy and/or Government had no interest in saving those sailors with Western help, having tried and failed by themselves). This paper focuses on the less examined organizational aspects of the *Kursk* rescue failure that reveal themselves in two particularly powerful ways: first, in the presence of various competing objectives at play, and second, in the conflicting evaluative principles that were in use to prioritize them.

There were sharp, unresolved disagreements on what was at risk, which led to multiple agendas coming into play, and the definition of various *objects at risk* (Boholm and Corvellec, 2011), including Russian naval secrets, the *Kursk* sailors' lives, the safety of the rescuers, and the political interests and reputational considerations of the Russian government and the Northern Fleet. These agendas (and objects at risk) shifted in and out of media focus, but were also given different and changing priority

by the rescuers and presumably, by key decision makers. Besides, even when the same risk object came into discussion - the risk to the lives of the trapped sailors- participants' assessments of the risk in question differed markedly. This can be traced back to the very different evaluative principles and expertise applied by the "Western" parties and the Russian navy.

This is not to say that incompatible principles of evaluation necessarily result in coordination failure - the tensions they raise can foster creative debates, with a recognizable beginning and end, collective resolution and perhaps even innovation (Simons, 2005; Stark, 2009; Hutter and Stark, forthcoming). But organizations that can resolve evaluative dissonance and processes that enable such a resolution are hard to find. In principle, their contours have been described in various literatures. Attempting to synthesize relevant works on pluralistic control and collaborative heterarchies, this paper proposes the foundations of what might be called *pluralistic risk management*, and it examines its conditions of possibility, in light of the lessons of the *Kursk* submarine rescue failure.

Sources of Evidence

We draw on Robert Moore's (2002) award-winning book *A Time to Die: The Kursk Disaster*, as well as on the field reports and personal recollections of one key participant, Commodore David Russell, who led the UK rescue effort. Moore was the Moscow correspondent of a British television company at the time of the *Kursk* disaster. He conducted numerous interviews with the Russian, British and Norwegian rescue forces, including those in command at the scene, and with the families awaiting news at the Vidyaevo Naval base; he later interviewed various other navy personnel, media commentators and technical experts. Apart from interviews, he examined extensive archival records, including the letters left behind by the trapped sailors inside the *Kursk*, and the Russian Government's subsequent post mortem and final report that resulted from a two-year inquiry.

The lapse of almost 14 years since the disaster made interviewing difficult, but we located and interviewed one of the witnesses, Commodore Russell, who maintained extensive field diaries ("situational reports") at the time, which both corroborate and enrich Moore's evidence. We recorded and transcribed 6.5 hours of interview material, prepared with Russell between November 2013 and February 2014, and also had an off-the-tape, informal conversation with Moore, which gave us a better understanding of his research process.

The following sections outline the incident and the rescue mission in chronological order, focusing on distinct elements (the accident, the survivors, the rescue parties and how they attempted at forming an organization, and the futile negotiations between them). Our Discussion follows, and we close the paper with a call for pluralistic risk management - an inclusion of pluralistic control principles into disaster and risk management.

The Events of the Kursk Rescue Mission

The Accident

The Soviet Navy, throughout the 1980s the main opponent of the U.S. Navy and its allies (including the Royal Navy), shrank markedly after the fall of the Berlin Wall. By most estimates, the Russian Federation Navy of the late 1990s was approximately half the size of the Soviet Navy at its peak. The navy's share of the defense budget declined from 23 per cent in 1993 to 9.2 per cent in 1998.ⁱ Russia's new military doctrine emphasized the Navy's role in securing the economic exploitation of Russia's sovereign seas, but no longer aspired for the "blue water" dominance of the USSR era.ⁱⁱ

Yet the submarine force was still one leg of Russia's nuclear triad.² Russia was a leader in the race to construct ever-quieter submarines. Built between 1992 and 1995, the *Kursk* was one of the largest

² The term "nuclear triad" refers to a typical arrangement of a nation's nuclear arsenal: strategic bombers; land-based intercontinental ballistic missiles, and submarine-launched ballistic missiles.

attack submarines ever built—505 feet (154 meters) long and four stories high. According to Russian doctrine, its role in an all-out confrontation with Atlantic allies would be to hunt down and destroy American aircraft carriers and battle groups. Apart from the low magnetic signature that made the sub difficult to track, its most distinctive feature was its double hull; with over 6.5 feet between the two steel hulls, the *Kursk* could survive a collision or torpedo attack, prompting its designers to describe it as unsinkable.ⁱⁱⁱ

Overall, however, the Russian Federation Navy suffered repeated budget cuts and by 2000, the condition of its support infrastructure was atrocious. The submarine piers, the torpedo-loading cranes, the repair shops, the rescue equipment, the training centers, and the housing all deteriorated rapidly.^{iv} In 1995, the Fleet's annual budget was spent in the first half of the year; payment of salaries was then suspended for several months.

In 2000, Russia's newly elected president, Vladimir Putin, promised to boost the prestige and morale of the military. In order to impress him, the Northern Fleet admirals decided to hold their annual summer exercise on a scale not seen since the collapse of the Soviet Union; it involved 30 surface ships and four submarines.

As always, the Norwegian Intelligence Service followed the Russian naval exercise. On Saturday morning, August 12, the Norwegian seismological institute recorded two massive explosions in the Barents, one registering 1.5 on the Richter scale, and the next, two minutes later, registering 3.5. Unbeknownst to the Norwegians, a compromised torpedo had exploded inside the *Kursk's* torpedo room, which then detonated most or all of the remaining warheads.

The *Peter the Great*, the Northern Fleet's flagship, logged a powerful underwater explosion, but senior officers, preoccupied with other logistical concerns, took no note. The shockwaves rocked a sister submarine, the *Karelia*, which was carrying out its own exercise orders 32 nautical miles away, but its commander and a visiting rear admiral onboard concluded that it must have been an underwater explosion linked to the exercise.

At 11:30 PM, half an hour after the *Kursk* missed its second routine communication, Admiral Viacheslav Popov, Commander-in-Chief of the Northern Fleet, issued an emergency alarm. Just after 5 AM on Sunday morning, the duty officer in the Navy's Moscow Command Center called Rear Admiral Gennady Verich, the head of the Russian Navy's search-and-rescue forces, at his home. Verich's first action was to gather a team of staff officers and start planning a response if the loss of the *Kursk* was confirmed. He also decided to fly up to the Northern Fleet's headquarters in Severomorsk and assume direct command of the operation.

Meanwhile, the scientific director of the Norwegian seismic institute remained puzzled by the "mysterious Barents data" and passed the information to the Norwegian Intelligence Service. Many analysts were on holiday and it was early Monday when Admiral Einar Skorgen, a commander of the Norwegian Navy, got the news. By then, he also had aerial intelligence confirming a concentration of Russian warships. Skorgen determined that the Russians were facing some kind of emergency. On a direct military-to-military link, he called Admiral Popov and offered "assistance if that is required," but was reassured that "the situation is under control, and we have no need for any assistance."^v

Inside the *Kursk*

The shockwaves destroyed the first five compartments of the *Kursk*, instantly killing all within, but the nuclear bulkhead held. Twenty-three sailors who resided in the aft compartments survived. Two hours after the explosions, as the *Kursk* lay inert on the seabed at 350 feet (100 meters), these sailors gathered in the ninth compartment, which contained the escape tower, their one remaining escape route (**Exhibit 1**).

A 28-year-old captain-lieutenant, Dmitri Kolesnikov, took charge. Taking a notepad and a blue pen, he wrote the date—"12.08.2000"—in the top left-hand corner and the time—"13.34"—in the top right-hand corner. Then he listed each survivor by name and rank.^{vi}

Once the nuclear reactor scrambled and electricity seized, the ambient temperature started to drop. The *Kursk* survivors changed into thick thermal clothing to combat hypothermia. The options for them were to wait for rescue by submersible or to attempt an escape via the tower, risking a perilous 350-foot ascent and hoping that someone was ready to receive them on the surface. They chose to wait. Since the most immediate danger was the build-up of carbon-dioxide in the air, the sailors did what they were trained to do, periodically opening up air-regeneration cartridges to hang them up and allow the air to circulate through them.^{vii} The chemicals inside would absorb carbon-dioxide, which the sailors replaced with fresh oxygen by burning candles developed for this purpose. However, the oxygen candles themselves posed a fire hazard.

UKSRS Mobilizes

On the morning of Monday, August 14, Russia's main television channel broke its schedule with a special announcement on "malfunctions aboard the *Kursk*" confirming that the submarine was "lying on the bed of the Barents sea." The Northern Fleet Press Service reported: "The crew . . . is alive and communications with them are being maintained . . . using tapping methods."^{viii}

The news was immediately broadcast around the world. Commodore David Russell had just arrived at his desk in Northwood, London, when his aide told him to turn on the radio, and they caught the story. Russell noted the time—8:05—and instinctively, began contingency planning. He knew that, to rescue anyone from a sunken submarine, time was of the essence.

With neither ministerial clearance from London nor a Russian request for assistance, Russell ordered the United Kingdom Submarine Rescue Service (UKSRS) to transfer to Scotland and identified a suitable vessel in the Barents and a port in Norway where the UKSRS team could join it. He also put in an executive order to lease an Antonov cargo plane from a commercial transport firm to carry the necessary equipment.

The Royal Navy possessed one of the most capable mini-sub, the newly refitted LR5, described as an "underwater helicopter" because of its maneuverability and versatility. Weighing 21 tons and with a crew of two, the LR5 used a "transfer skirt" which could be attached to a submarine's escape tower, allowing hatches to be opened and the trapped sailors to make their way into the LR5's rescue chamber.

The UKSRS team maintained a database of commercial motor vessels (most serving in the offshore petroleum industry) that were suitable to host the LR5 as a mother ship. By outsourcing the mother-ship operations, UKSRS had the flexibility to use vessels around the world without the overhead of maintaining one itself. Russell's team chose the *Normand Pioneer*, which was based in northern Norway and was in a good position for a dash to the Barents. By Tuesday morning, the UKSRS personnel and equipment were all gathered in Prestwick, Scotland, ready for transit to Trondheim, the "preferred mobilization port."

Russell felt no technical, budgetary, or political constraints to the rescue mission, only the pressure to act quickly. First, with an annual budget varying between GBP 500,000 and 1 million (\$0.8–1.6 million), UKSRS was adequately equipped and funded and its personnel was more than adequately trained to carry out a rescue mission in the relatively shallow waters of the Barents. Second, while politicians at Number 10 were debating whether or not to make an official offer of assistance to Russia, Russell was convinced that there was no harm in "stealing a march on events" by putting UKSRS into a state of readiness. Third, Russell acted out of a deeply felt conviction that he, as a senior naval officer, had sufficient latitude:

There is a tradition in the Royal Navy of doing what you think is right, taking the initiative, and being prepared to justify it later, rather than doing nothing and being unable to justify your inaction. The great test is: Can you sleep at night? Hence, to some extent this was an example of what Royal Navy senior officers were expected to do—the right thing. I did not feel the need to seek orders from the UK. It was sufficient to know that my mission was to rescue survivors if I could and help the Russians. Besides, if there isn't something which literally tells

you that you can't do something, then if you do it, you're—in theory—not breaking a rule. Of course, the flip side to this is that if you got it wrong, it was your head on the block.

Russell quoted the “law of the sea” as another trigger of his actions:

All navies, unless at war, have a duty to help one another. This is an unshakable value for those who go to sea, even more so for submariners.

Finally, Russell was convinced that his team was the right team to carry out the mission:

It felt like my whole life had been a preparation for this moment. It's because we are submariners, we understand what the conditions in the *Kursk* would be like. We knew that it would be freezing cold. We knew there would be water in the compartment. We knew it would be pitch-dark. We knew that the atmosphere would be lacking in oxygen and building up in carbon-dioxide, the pressure would be increasing, their time was limited. It's been part of our submarine training. So we were the experts, if you like.

Organizing the International Rescue Effort

By the end of Monday, August 14, the Norwegian, British, and U.S. governments had offered assistance to Russia. That evening, Admiral Kuroyedov, a close ally to President Putin, dampened hope of a quick rescue and, discussing the possible reasons for the disaster, alluded to the possibility of a “collision.”

Even though he did not specify what the *Kursk* could have collided with, his announcement raised the political temperature—reviving memories of occasional Russian-NATO submarine collisions—and drew attention from the immediate concern for the survivors. Due to the undoubtedly intensive British and American spy operations off the Kola peninsula during previous decades, the Northern Fleet was bound to question the sincerity of any offer of help and, at worst, to regard the offer as a cover for further espionage.^{ix} The U.S. gesture was dismissed out of hand as politically unacceptable.^x However, offers from Norway and the UK, countries with historic and geographic links to Russia, were harder to dismiss. The Russian admirals were split down the middle and so were their superiors in the Ministry of Defense and the State Duma in Moscow.

According to the Draft Russian Military Doctrine of 1999, “command and control” of the armed forces was exercised by these federal political authorities. By tradition dating back to the tsars, the minister of defense normally was a uniformed officer. The State Duma also seated a large number of deputies who were active-duty military officers, another tradition dating back to the imperial era.^{xi} This tight centralization of decision-making was coupled with a top-down control ethos. Russell, who had been privy to Russian naval communications for decades, understood that his Russian counterparts had much less latitude in decision making than he did:

My experiences of watching Russians, listening to their communications, watching their exercises and their operations is that they are very careful to observe orders and very careful not to take responsibility or demonstrate too much initiative. It's not encouraged. So there is a plan. Everybody has a part in that plan. You do not vary or deviate from it. And if you do, you tend to have to ask permission from further up the chain. So quite often you'd hear the phrase, “I will have to ask my senior.” Russian officers are trained to follow orders, trained to seek approval for what they do, or if there's a problem, to ask for the answer from above, not to necessarily fix it themselves.

On Tuesday, senior officials in the Defense Ministry were debating whether to accept Western help. Many argued that the Western offers were cynical and hypocritical gestures from naval powers whose only real interest in the Barents Sea was espionage. The *Kursk* was the most modern submarine in Russia's arsenal, her missiles and equipment among the most sensitive secrets in the Navy. To the older generation of military leaders in Moscow, the idea of losing 118 men aboard the *Kursk* to protect military secrets, while tragic and embarrassing, did not constitute a military disaster. However, a younger cadre of naval officers deeply resented the fact that their conservative colleagues appeared to

regard saving the lives of the *Kursk* sailors as a secondary priority. They argued that Russia would look callous if it rejected international assistance. There was also uncertainty about which way the new president would view the offers of help from aboard. But President Putin was on holiday and silent. In Moscow, there was paralysis.^{xiii}

While the politicians in Moscow debated, the Russian submarine rescue team located the *Kursk* and determined its datum (69°36'59"N, 37°34'26"E), making several attempts to dock. On two occasions, the pilots managed to attach a rescue mini-sub to the *Kursk*, but due to short battery lives, and to other technical constraints, these efforts remained fruitless. Meanwhile, Northern Fleet officers watched the rescue attempts from the bridges of the surrounding battleships, and could not contain their frustration. One staff officer shouted at Verich "*Admiral, you are a disgrace to your uniform and your Navy!*"^{xiii} On Tuesday evening the weather turned bad and Admiral Verich had to suspend rescue efforts.

In Moscow, a decision was made to accept Western help. On Wednesday at 2 PM, Admiral Popov called his Norwegian counterpart, asking for deep-sea divers. The Russian Navy's divers operated at a maximum depth of 60 meters, but to reach the *Kursk*, they needed professional divers, equipped with the most modern diving and decompression facilities, who had honed their skills in the off-shore petroleum industry, and for whom operating at 100 meters was a "walk in the park." Skorgen knew where to find those men and immediately called Stolt Offshore, a commercial contractor headquartered in Stavanger, Norway. The Norwegian military treated the rescue mission as its own national emergency and, apart from commissioning Stolt to bring its nearest available vessel to the accident site, they provided fighter jets for transport, gathered 120 tons of equipment from across northern Europe, and mobilized the divers, support teams, translators, and members of the Norwegian Radiation Protection Board. By Friday, all were *en route* to the Barents aboard the motor vessel *Seaway Eagle*.

Meanwhile, two Russian admirals had met the British Naval Attaché in Moscow on Wednesday, requesting information on the rescue technology the Royal Navy could provide. Brazenly contradicting the hardline agenda of their more conservative colleagues, the two admirals handed over diagrams about the *Kursk's* hatch and how to operate it.^{xiv} A few hours later, Russell, who was eagerly awaiting a Russian response in London, was invited to participate in a conference call with the Russian Military Representative at NATO headquarters in Brussels, where a NATO offer of assistance had been extended. In the evening, the Russian government officially accepted the offer. Russell, his direct reports from UKSRS, and an interpreter raced to a military airfield near Northwood and boarded an RAF aircraft for Murmansk, expecting to join the Russian Navy command. While the *Normand Pioneer*, with the rest of the UKSRS team and equipment aboard, had sailed to the Barents on Thursday morning, Russell and his colleagues were refused permission to enter Russian airspace at the Norwegian-Russian border. Russell recalled the shock of the moment that, in retrospect, he came to see as a "key event":

The idea was that we would start to brief the Russians, join in with their operation, and as soon as the team on the *Normand Pioneer* arrived, we could use them. We got to within about half an hour, I suppose, of crossing into Russian air space when we were told that we didn't have approval to cross into Russian airspace. So we landed somewhere in Norway. We set up communications in a hotel, and then spent a day in fruitless negotiation to move to the Russian flagship. Finally, we gave up, and on Friday flew via a Norwegian Army helicopter to join the *Normand Pioneer*. This meant we could never set up a joint command and control structure and could not identify a common objective, because the UK team would not be co-located with the Russian command. This might have been unrealistic, as international relations were still emerging from their Cold War chill, but it was a key indicator that this mission would not be easy.

Russell attributed the refusal to Russian national security concerns, as no British commander had ever set foot aboard the *Peter the Great*. Yet he was determined not to be deterred from his objective – "to save lives."

Nobody ever had the temerity to suggest to me that I use this mission for intelligence gathering, and had they done so I would have told them not to be so silly, or probably used slightly stronger words than that actually, because you can't mix the two things up. If you're there to rescue people, you're there to rescue people. If you're there to gather intelligence, that's fine, but don't go around trying to rescue people. You can't mix the two things and keep both things honest. I would have had no part in intelligence gathering when I was trying to rescue people.

In the end, both the *Normand Pioneer* and the *Seaway Eagle* arrived at the scene of the rescue on Saturday morning (see **Exhibit 2** for a timeline and summary of events during the week). The international rescue effort was coordinated from the *Peter the Great* (see **Exhibit 3** for the apparent command and control arrangements.) Ships communicated with ships using their VHF radios and international marine communications—however, these conventions were developed primarily for port operations and for summoning rescues, and were ill-suited to carrying out non-routine tasks. Russell felt “it was difficult to work out who was in charge” —partly, because there was no previous precedent for a similar operation:

There isn't a common communications system. There isn't a common language. There isn't a common protocol—and anyway, the Russian commanders would have been very reluctant to speak directly to the Western commanders without approval. So the link through the [British] Embassy and Moscow was quite important, particularly initially. [...] We haven't practiced operations with multiple ships in some sort of organized group with the Russians. And now that's really what we were trying to do. We were trying to organize a group of ships and people to do a common task, and we had no precedent for doing that with the Russians. There was also no pre-agreed process for the British rescue forces to work for Admiral Skorgen.

Russian naval command remained firm on the need to keep the international rescue parties at a distance from the *Kursk* datum, and had directed both the *Normand Pioneer* and the *Seaway Eagle* to take a position 14 nautical miles from the accident site.

Meanwhile, Rear Admiral Verich and his team of submersible pilots continued—weather permitting—the frustrating cycle of short and futile dives to the *Kursk* and long battery-recharges. By Thursday, the weather was letting up, the available two rescue submersibles were both ready to launch, and more experienced pilots had arrived. Despite the swift current, one pilot managed to land the first submersible on the *Kursk* eight times, and on the final attempt succeeded to hover in a stable position over the hatch for twenty minutes—an incredible feat of skill and stamina—while attempting but ultimately failing to create the necessary air seal.^{xv} Next, the second mini-sub made an attempt, but upon entering the water, a leak (probably the result of poor maintenance) caused an uncontrolled dive. The pilots managed to steady the damaged mini-sub, but were in grave danger themselves and had to abandon the operation^{xvi}.

“Are there any signs of life?”

Since Tuesday, 15 August, the families of the *Kursk* sailors had been campaigning to save their husbands, fathers, and sons, calling Moscow newspapers and radio and TV stations across Russia. Their assessment was that the admirals were only worried about the submarine, not the men trapped inside.^{xvii} On Tuesday evening, they were invited to attend an official meeting at the Officers Club of the Vidyaev naval base. A vice admiral from Moscow sought to reassure them: “Yes, they are in peril, but they are alive, and our Fleet is doing all it can to rescue them. Have faith and stay patient for a little longer.” The same evening, Igor Baranov, the construction director of the *Kursk*, spoke at a press conference: “The ship is the best in the world in terms of the life support for the sailors. We cannot know the reason for the accident or the scale of it. But in the *Kursk* there is food, water and regeneration systems. [...] It is possible the entire crew can be saved. [They might survive] five or possibly six more days.”^{xviii}

Meanwhile, the Northern Fleet Press Service officially released the news that knocking had been heard from inside the *Kursk*, without disclosing any further details.^{xix}

As the week passed, Russian media grew more and more critical and even furious. On Thursday, the Kremlin announced that president Putin would not break off his holiday on the Black Sea coast, where he was also performing routine presidential duties, as his presence would only distract Navy commanders, but he was being briefed every two hours. Admiral Kuroyedov declared that the emergency supplies in the *Kursk* could keep the sailors alive for at least one more week. On Friday, the *Komsomolskaya Pravda*, a national daily, ran a front page headline “SOLD FOR 18,000 RUBLES . . .” followed by the names of the *Kursk* sailors (which it obtained by allegedly bribing an anonymous officer at Fleet headquarters with 18,000 rubles, equivalent to \$645) and spoke out against “crass military culture that valued machines more than men.” The *Sevodnya* newspaper debated the politics of the international rescue mission and quoted a Defense Ministry official saying: “. . . the admirals think everything will end in political catastrophe if a single Russian sailor is rescued from [the submarine] with foreign help.”^{xx}

On board the *Seaway Eagle*, the Norwegian rescue team speculated about the *Kursk* sailors’ survival chances. Offsite manager Graham Mann, who was in charge of the divers, had a clear philosophy that allowed the speculations to end: “Unless I know they are dead, I will work on the assumption they are alive.”^{xxi} In almost the same words, Russell declared to his team: “Until we know for certain that there’s no chance, we carry on with the rescue operation.”^{xxii}

Throughout the week, the daily situation reports sent by UKSRS from the *Normand Pioneer* to Northwood were asking myriads of questions directed at the Norwegian divers, the Russian rescue service, and their own intelligence. Starting with an urgent “are there any signs of life?”, the questions touched upon a wide range of expertise, including the naval engineers in the UK Ministry of Defense, who were studying *Kursk* hatch drawings they had received from the Russians in order to plan how to dock LR5 with the submarine, and the Institute of Naval Medicine at Laverstoke in Hampshire, in order to learn more about the likely condition of the *Kursk* sailors. Russell commented:

We would make a single request with all these questions back to what we call our Operating Authority—our senior operations person, if you like. And he would then take responsibility for finding out the answers from the experts, whatever they were, and getting the answers back to us. So it wouldn’t be our job to say, Oh gosh, we need to ask that particular engineer in that particular department. That would be the job of the Operating Authority. And he would certainly go across boundaries, and nobody would expect him to be constrained by silos.

By Friday, UKSRS had learnt that the *Kursk*’s hatch dimensions were compatible with LR5’s, noting in their daily situational report: “Now [we are] as confident as we can reasonably be that [docking] successfully is possible.” The questions probing the Russian rescue effort and the condition of the *Kursk* sailors remained unanswered—UKSRS had to go by the media reports.

UKSRS also sent dozens of requests for equipment and personnel. During the week, they procured a Royal Navy officer who was a Russian linguist, an underwater microphone from home base capable of detecting the slightest sound onboard, and soda-lime curtains from the Norwegian Submarine Service to absorb carbon dioxide. By Friday night, UKSRS had tentative plans in place for the “LR5 flight.”

The most controversial aspect of this, having been debated by the team for two days, was the composition of the mini-sub’s crew. With a crew of two, LR5 could rescue 16 sailors at a time. Russell anticipated that a Russian-speaking submariner was also needed, as well as some Russian submariners to “supervise what goes on.” LR5, in theory, *could* have been used for intelligence gathering, and Russell surmised that he needed to give the Russians a way to allay their suspicions.

At close to midnight, Russell concluded his situational report with the following “intentions” for the next 24 hours: (a) Meet with Russian and Norwegian colleagues, in order to resolve technical/safety issues and command and control arrangements; (b) conduct initial survey around the hatch area with LR5; (c) subject to resolution of technical/safety issues with Russians and favorable hatch-area survey, start sequence of LR5 flights.

Saturday, 19 August, aboard the *Seaway Eagle*

At 11:30 AM, exactly a week after the double explosion aboard the *Kursk*, the three rescue parties held a summit meeting on the *Seaway Eagle*. Chaired by a Norwegian submarine captain, the meeting brought together, for the first time, Admiral Verich, Commodore Russell, and Stolt's offshore diving manager, Graham Mann. For Russell, the meeting was a disappointment. In Saturday's situational report, he noted: "Following grateful welcome from Russians, it very quickly became clear that the Russian aim for this meeting was to obtain agreement to a predetermined plan [of their making]; to use Norwegian [divers] first for inspections and a hull tap check, holding LR5 in reserve if required."

Diving operations would start on Sunday morning and Mann agreed to put two diving teams into saturation, insisting that they would first be allowed to undertake a detailed risk assessment survey around the submarine. Verich was not authorized to agree to this on the spot. Having promised to return in the evening to discuss the diving plan with Mann, Verich was about to leave the *Seaway Eagle*, when Russell "pressed" him "to address the deployment of LR5." However, Verich discounted LR5's capabilities, declaring that if the Russian submersibles could not form a seal with the submarine's escape hatch, no other mini-sub could. Russell made a futile attempt to explain LR5's superior capabilities: "It was clear that the Admiral had been briefed on the pre-refit capabilities of LR5 and chose to ignore briefing on her improved capability." In a desperate gesture to persuade Verich, Russell invited him to visit the *Normand Pioneer* and view LR5 for himself, but Verich declined.

Verich appeared to believe that, in fact, there could be no survivors left on the *Kursk*, citing seven days as the maximum amount of time they could have survived. He wanted the Norwegian divers to confirm his belief that the *Kursk* had been flooded, so that "the rescue could be called off and the Russian People told." Russell argued that, in the Royal Navy's experience, there could be no clear-cut estimates for how many days trapped submariners could survive:

The Russian view about this was almost mechanistic, really. They had worked out—I don't know on what basis they'd worked out—that the air would run out after seven days, and therefore after seven days everyone is dead. Life and death just isn't like that. You just don't know all the variables, and even if you do, these are only estimates. Nobody's ever run an experiment to see how long people survive in these conditions.

Russell also realized that the Russian rescue team was no longer in "rescue" mode:

The Russian mindset appeared to have already shifted from rescue to salvage. Now, you can speculate as to why that was. Some of it might have been, look, we know how long they've been down there, we know when the explosion was, we don't think they can have survived. All our books tell us they're dead. Or it could be more to do with the fact that they really wanted to get this thing ended because it was a political and military embarrassment. But whatever, there was no doubt there was a completely different approach to the problem. That's a key moment, really, when you realize that your ambition, your objective, is not shared by the other side.

The international rescue summit ended. Admiral Popov ordered the *Seaway Eagle* five nautical miles closer to the *Kursk* datum, while the *Normand Pioneer* remained where it was, 45 minutes steaming time from the scene. Russell wryly commented: "14 nautical miles is a long way away. It's over the horizon." But clearly, the distance between the leaders of the Russian and British rescue forces was immeasurably longer.

"Submariner to submariner..."

Later that day, the *Normand Pioneer* received a visitor—Vice Admiral Oleg Burtsev, commander of the *Kursk*'s flotilla. Unannounced, Burtsev indicated he came to talk as a submariner to a submariner. Russell felt instant rapport with him and later noted in his situational report:

There appears to have been no communication between Burtsev and Verich. Burtsev did not know where Verich was and indicated that he didn't particularly care. Burtsev promised to bring [two engineers who are familiar with the Kursk's escape tower and hatch mechanism] to the Normand Pioneer as soon as possible, to confirm the exact technical details. Although the Northern Fleet's submersibles are planned to operate through the night until 07:00, Burtsev was keen to employ LR5 as quickly as safely possible thereafter. He was briefed on LR5 capabilities and commented that, although conditions were probably on the limits, he was keen to give it a chance. Atmospherics were business-like and extremely warm throughout. He departed after 45 minutes.

In his summary reflections of that day, Russell concluded: "There appears to be considerable confusion as to what the Russian plan is and who is in charge of it. Nevertheless, Burtsev is clearly a man who is well motivated and liable to get things moving. If he convinces Popov that the current rather pedestrian approach should be abandoned, then LR5 could be in action tomorrow."

UKSRS spent Sunday waiting in vain for the Russian submarine experts Burtsev had promised. At the end of the day, Russell concluded his briefest situation report: "No progress obtaining submarine experts since Admiral Burtsev's visit last night. In view of apparent intention of Russians to start diving operations [deploying the Stolt divers], I do not expect LR5 to be employed in the near future and believe the outcome of these diving operations may well determine the nature and extent of further rescue efforts."

Diving operations started on Sunday at 8AM and lasted all day. While the submarine's hatch remained closed, the divers performed equalizing-valve checks and by the end of the day, produced only inconclusive evidence on the state of the submarine. On one hand, the escape tower was flooded, but on the other, there was still a chance that the ninth compartment was sealed and dry. The divers also reported that the hatch had appeared undamaged and recommended that the LR5 should be deployed to attempt rescue. The Royal Navy submersible would be of use only if the escape tower was dry – and that possibility still existed.^{xiii}

At 2AM on Monday, Admiral Popov ordered the *Normand Pioneer* to the accident site and ordered Verich to allow the deployment of the LR5. While UKSRS was preparing to launch LR5, shortly after dawn, the top hatch of the submarine swung open. There were no divers around the stern of the *Kursk* at the time – but the buoyancy bag they had fitted on the hatch proved sufficient to open the lid during low tide that morning³. The divers could now enter the escape tower and examine the lower hatch directly, carrying out another check of whether the pressure inside the *Kursk* was different from sea pressure. It wasn't, indicating that the sub was flooded. At 10:30AM, divers opened the bottom hatch and lowered a small video camera into the ninth compartment. The rescuers had pictured the sailors dying from either flooding or from carbon-dioxide poisoning – but they now saw evidence of a fire.⁴ The camera showed blackened walls, cracked and blistered paintwork, and eerily, a body floating face down.

Epilogue

At 11:40AM, aboard the *Peter the Great*, Commodore Russell was invited to meet Admiral Kuroyedov. Russell recalled a solemn meeting with no smiles, all handshakes and salutes, which in the end took an unexpected turn:

³ Russell explained, "The divers had fitted a floatation device on the upper hatch. When the lid subsequently opened, it proved that the pressure on either side of the hatch was sea pressure—we had direct evidence that the escape tower was flooded. So the next question was: is the pressure inside the submarine the same as the pressure inside the escape tower?"

⁴ According to the post mortem, the *Kursk* sailors perished in a flash fire ignited by one of the air-regeneration cartridges. Changing those chemical cartridges was the sailors' lifeline, but also posed a lethal threat. One of the survivors, while ripping open the packaging, appears to have fumbled and dropped it. By this time the sailors must have been standing in almost waist-high water, and the chemicals, having reacted violently with water under the rising pressure, ignited a flash fire.

Interestingly, my discussions on board the Russian flagship were much more open and apparently sincere. I think we did at last break through the ice. We talked also about how maybe some good would come out of this. Kuroyedov asked, "Do you think we should learn more about each other's escape capabilities, so that we can work more together in the future?" I said I thought that would be something that the UK would be very pleased to do, making foreign policy on the hoof, really. After eating some terrible pieces of sausage, he said, "Well, thank you very much for trying to help. What will you do now?" I said, "Well, if there's nothing further that we can do, we'll depart and head back." He asked, "Do you need to ask Northwood?" I said, "No, no, I'm quite happy that if there's nothing further I can do to help you, then we will leave and let you get on with your work." He said, "Ah. I would have to ask Moscow."

Later that day, at the request of the *Normand Pioneer's* crew, Russell led a memorial service dedicated to the *Kursk* sailors. Soon after, the *Normand Pioneer* was exchanging parting signals with the *Peter the Great*. The Russian crew, standing in line with their naval caps held aloft, cheered ship. Russell thought to himself wearily, "So characteristic of the paradoxes of this mission. Amongst so much suspicion, at the very end, a striking gesture of dignity and friendship. A symbol, perhaps, of what might have been achieved."

Discussion

In the remainder of this paper, we shall focus on the rescue organization that was forming as a result of the involvement of different parties in (what turned out to be) a failed multi-party rescue mission.

Both the United Kingdom and Norway offered assistance with the submarine rescue mission to the Russian Navy. The first question is what motivated them. One possibility is political reasoning, particularly in the case of Norway, which has got both historic and geographic ties to Russia and has collaborated with its large neighbor in the past. Norway was also motivated by a perceived need to protect itself from a potential nuclear disaster on its doorstep. The U.K. may have sought to improve relations with Russia, especially in light of Vladimir Putin's election to the Russian presidency just four months prior to the incident. While political and diplomatic motivations must have played a central role at the higher levels of military and government, the explosive international media attention devoted to the high-profile calamity triggered many other actors to get involved at their own initiative.

Some Western individuals who got proactively involved in the rescue effort (e.g. Commodore David Russell, Admiral Einar Skorgen) decided to do so instinctively, based on compassion and a moral conviction ("the law of the sea"). As explained by Russell, the "law of the sea" carries weight among (supposedly) all navies and dictates that, during peacetime, sailors have a duty to rescue other sailors at sea, if they can. He further emphasized that, in this case, the feeling of empathy between submariners was a particularly strong bond. Besides, the opportunity to help was given - Russell's Submarine Rescue Service unit happened to be ready to leave on a training session in the Mediterranean, so Russell, without waiting for the politicians to order him to do so, quickly turned the operation into a live exercise in the Barents. Skorgen likewise took initiative in mobilizing his government's resources and sending expert deep-sea divers to the scene.

Action triggered by one's values can be fast and decisive, but may also lead to unpredictable and unexpected results. The question is therefore twofold: first, were the driving values and objectives focussing on 'rescuing people' indeed shared by the Russian side? Second, how to create on the hoof a network organization that would coordinate multiparty action, while joining the three parties into a temporary structure?

The following quote by Russell summed up the challenge:

"We haven't practiced operations with multiple ships in some form of organized group with the Russians. We obviously have with NATO, but not with the Russians. That's really what we were trying

to do. We were trying to organize a group of ships and people to do a common task, and we had no precedent for doing that with the Russians."

With no precedent for such coordinated action in the past and no pre-agreed joint routines – i.e. in the absence of habituated, learnt ways of responding to problems (Weick, 1990) – the three parties had to quickly set up a virtual organization to enact an emergency operation.

Emergency operations typically require strong commitment to others: putting aside self-interest and territoriality for cooperation and mutual support (Simons, 2005). That is, in order to best use the combined (and together sufficient) rescue assets of all three parties, a highly responsive organization was required. Organizational theorists have long advocated that maximizing spans of influence (interactions) and support (shared commitment) is key in the design of highly responsive organizations, but so are broad accountability (empowerment) and the pooling of resources. In particular, it has been argued by disaster management scholars that an organization that places emphasis on communication and empowerment is better prepared to adapt in the face of non-routine emergency situations (Howitt and Leonard, 2009). Routine behavior can work against cognitive narrowing effectively only when the situation is well-understood (a "routine emergency"), but may break down in the face of novel risks – hence novel situations require actors to experiment, and leadership and organization that enable them to do so (Weick, 1990; Howitt and Leonard, 2009). During times of crisis, enhanced interpersonal communication, trust, and openness can in addition serve to counteract the loss of requisite variety in ideas that occurs under stress (Mandler, 1982; Weick, 1990).

Understandably, the Russian fleet's attitude toward the Westerners was characterized by distrust, suspicion, and a strong reluctance to share information proactively. Meanwhile, UKSRS was challenged to demonstrate its commitment to the rescue and the sincerity of the claim that it had no hidden, self-serving agendas.

Using Simon's *Levers of Organizational Design* framework, we can now compare and contrast the two organizations whose differences became particularly salient during the rescue mission (UKSRS and the Russian naval rescue organization), in order to understand the challenges of combining them into the aforementioned combined (if temporary) entity.

Span of Control

Span of control represents the range of resources for which a manager is given decision rights and held accountable. Resources include people, equipment, inventory and other assets such as accounts receivable. For any manager, span of control answers the question, "What resources do I have at my disposal to get the job done?" (Simons, 2005)

In terms of decision rights, the Russian command structure entailed a narrow span of control for its officers, who had to seek approval from superiors for nearly every decision and use of resources. Independent action by commanders was not encouraged, exemplified by Kuroyedov's admission to Russell that he would not even be allowed to sail the flagship *Peter the Great* back to port without prior approval from Moscow. Due to years of budget cuts, officers in the Russian navy at the time of the disaster were expected to achieve their tasks with very limited resources in terms of staff, physical assets and equipment, as well. Because of lack of funds, men of the Northern Fleet and Russian SRS were generally stressed, under-paid, and charged with the use of poorly-maintained, often out-of-date equipment.

The British naval tradition, stretching back many centuries, maintained a wide span of control for its captains, devolving decision-making authority (consistent with strategic objectives) to the level of senior officers. Russell attributes this independent, entrepreneurial culture to the history of the Royal Navy and the need for officers in far-flung reaches of the world to make decisions independently without the ability to communicate with superiors.

Furthermore, the British rescue team controlled high-quality, well-maintained assets, which included one of the world's best rescue submersibles (LR5). Financial facts also confirm the huge gap between the UK and Russian budgets allocated to the rescue organizations: The financial constraints were particularly felt by the Russian search-and-rescue forces. Year after year, their budget was slashed and at the time of the disaster, bottomed out at \$14,000⁵. In contrast, with an annual budget varying between GBP 500,000 and 1 million (\$0.8–1.6 million), UKSRS was suitably equipped and funded, and its personnel was more than adequately trained to carry out a rescue mission in the relatively shallow waters of the Barents.

Span of Accountability

Span of accountability is defined as the range of tradeoffs that affects the performance measures used to evaluate a manager's achievement. For any manager, span of accountability answers the question, "What measures will be used to evaluate my performance?" and may be set widely or narrowly according to how many tradeoffs a manager is allowed in order to achieve desired levels of performance. Individuals accountable for high-level, broadly defined goals (such as mission success or business profit) can afford more trade-offs than those measured on narrow output measures such as headcount or specific expenses in an operating budget (Simons, 2005b:56). When managers need more than the resources under their direct control to achieve what is asked of them, they must become entrepreneurial, and draw on their ingenuity, interpersonal networks, and influence skills to pull together the resources needed to achieve their goals (Simons, 2005).

In the Russian Navy, span of accountability was typically set narrow, allowing officers and men few tradeoffs in the execution of their duties. For instance, another Northern Fleet submarine participating in the exercises, the *Karelia*, felt the shockwaves from the explosions on board the *Kursk* but did not break the surface to communicate its detection or clarify what the explosions could have signified. The captain and crew of the other vessel were accountable only for their own role in the exercise, and they were not "primed" to raise problems outside their immediate focus of concern.

In the Royal Navy, span of accountability was wide. Officers were expected to act entrepreneurially to achieve broadly defined mission goals. For instance, Commodore Russell independently authorized the commissioning of a cargo plane to transport the LR5 to Norway to assist the Russians with their rescue effort. In the U.K. organization, Russell was commended for skipping the normal, orderly approval process for initiating an international endeavor at the highest level of military command in favor of quick, autonomous action that corresponded to his perception of the pressure of time.

Span of Influence

Span of influence is defined by the range of interactions one needs to master across organizational silos and boundaries in order to perform one's task. For any manager, span of influence answers the question, "How wide do I need to cast my net for information and support in achieving my goals?" (Simons, 2005). An employee with a narrow span of influence does not need to pay much attention to people outside his small area to do his job effectively. An individual with a wide span of influence, however, must interact extensively with, and influence, others (Simons, 2005b:57).

The span of influence in the top-down Russian naval organization was narrow. Units such as the rescue services commanded by Admiral Verich were apparently expected to complete tasks with only their own resources at hand, while influencing other units and superiors was not seen as required for the execution of their duties. For instance, Verich refused the deployment (and even the inspection) of UKSRS' rescue sub. There was also very limited interaction between Verich and Admiral Burtsev, commander of the First Submarine Flotilla of which the *Kursk* was a part. During the week of the

⁵ Evidence cited by Robert Moore in front of a Harvard Business School classroom on 20 February 2014.

crisis, in contradiction to Verich, Burtsev communicated to UKSRS and the Norwegian rescue forces that their help and the deployment of LR5 was indeed desired and welcome and promised to bring engineers and technical experts to the scene. Evidently, however, Burtsev lacked the span of influence required to rally key decision-makers in higher echelons that would have been necessary to enable more collaboration with the Western rescuers.

The span of influence in the U.K. rescue organization was higher. On one hand, Russell and his team reached out to many others within and outside the Royal Navy including the British naval attaché in Moscow, and intelligence and other expert backing from academic institutions. On the other hand, Russell and his team did not need to reach out to these various entities directly – they operated through an intermediary (the “Operating Authority”). This limited their need to interact with others substantially – conserving time and energy for the task at hand.

Span of Support

Span of support is defined by the amount of help that an individual can expect from people in other organizational units. For any manager, span of support answers the question, “How much support can I expect when I reach out to others for help in achieving my goals?” A wide span of support becomes critically important when an organizational unit requires a strong commitment from others in the organization in order to meet its objectives. According to Simons, this span is the least amenable to ‘adjustment’ as it is largely determined by people’s sense of shared responsibilities, which in turn stems from an organization’s culture and values (Simons, 2005b). But social psychologists and leadership scholars such as Beer (2009), highlight four factors that influence the transformation of individual responsibility into shared responsibility (and thus may broaden the span of support in an organization):

1. *Shared purpose* increases group cohesion and limits parochialism and subgroup fragmentation.
2. *Group identification* or similarity between group members enhances the strength of group identity.
3. *Trust* - the expectation that another party will perform a desired action in the absence of monitoring or control.
4. *Equity* - the fairness of the distribution of resources and rewards among those who contribute to the organization’s success.

Span of support in case of the Russian rescue services was narrow as this unit could not reliably look to others for aid in accomplishing its tasks. The budget cuts that so reduced the Russian span of control also had the effect of eroding the sense of equity within the organization. Defects in the compensation system—including severe delays and, often, failure to pay what was owed—might have contributed to reduced morale and undermined the shared purpose and group identification of Russian sailors and officers in general. Furthermore, given the apparent lack of a shared and unequivocal commitment to save the Kursk sailors, Admiral Burtsev’s expectation of support from within the Russian military organization could not have been met.

In contrast, the UK rescue forces enjoyed a wide span of support. The cooperation and practiced coordination among NATO allies built a shared group identity and assured the British in their expectation that others from outside their own organization would make themselves available to help achieve common goals. To the British, joining forces with Norwegian deep-sea divers in this mission was unproblematic given their shared purpose and the trust they had established through past joint activities.

Figure 1 sums up the discussion of the patterns of organizational design displayed by UKSRS and the Russian Rescue Services. The patterns that emerged are by no means pathological in themselves. This is because in both cases, the sum of the spans that approximate the supply of organizational resources provided to individuals (span of control; span of support) are roughly in balance with the

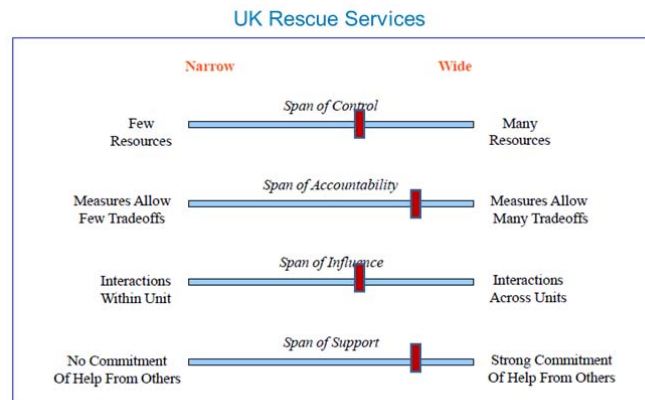
aggregate demand for organizational resources (approximated by the span of accountability and span of influence). In other words, to paraphrase Simons (2005b), the supply of resources (span of control plus span of support) roughly equal the demand (span of accountability plus span of influence) at both UKSRS and at the Russian Rescue Services.

Moreover, each of the two configurations is typical (and telling) of organizations that execute very different strategies. The Russian configuration resembles many organizations that standardize work by using plans and performance measures that allow few trade-offs, minimize resources allocated to specific units or positions, require people to pay attention only to their own jobs, and reward them accordingly. This *low-cost configuration* is particularly well-suited to companies following a low-cost strategy (see discussion of Wal-Mart's strategy and the corresponding low-cost design configuration in Simons (2005b)), and those that must abide by strict rules and operating procedures (e.g. power plants). In sum, the Russian configuration is typical and telling of a hierarchical, tightly controlled organization, and (ignoring pathological resource shortages) by Simons' equilibrium criterion, it could well have been an adequate configuration for its strategic purposes.

In contrast, the pattern displayed by UKSRS is typical of an innovation-oriented, entrepreneurial firm, which allocates more people, assets and infrastructure to tasks, but also empowers people more, and holds them accountable to even more. In fact, this kind of organization creates an entrepreneurial drive by holding individuals accountable for very broad mission goals, applying broad success criteria, which in turn spur managers to be more creative, and to figure out how to succeed without direct control of all the resources they need. In other words, people in the *entrepreneurial configuration* are typically held accountable for more than what they actually control. Again, this configuration is by no means unique – many a marketing and sales manager in diverse industries could testify to job (and unit) designs that force people “out of the box”, as it were. As long as the supply of, and demand for, resources that apply to such jobs and units are in rough balance, these configurations are viable. However, the Kursk rescue failure shows the frictions and tensions that become quickly apparent when two of these very different (if individually sustainable) organizational configurations come together in one mission.

Figure 1: Comparing the four levers of organizational design





We can now explore some of the frictions (and set them against the more positive developments) that occurred when these rescue organizations tried to collaborate. We shall consider how these dynamics affected the design of the “virtual organization” that was temporarily brought into being, and in particular, how the dynamics affected multiparty commitment to help others.

Considering the levers of organization design, there were both promising developments and frictions in the dynamics of the rescue organization:

Promising developments:

Increased span of control: The promising developments during the timeframe of the case began with the Russian Federation’s decision to accept Western support, which enhanced the rescue organization’s span of control dramatically by contributing valuable resources and personnel from the UK and Norway.

Span of support: The span of support was also widened for the rescuers by the Russian Navy’s willingness to share some critical information, including the datum of the *Kursk*’s position and technical drawings of the submarine’s escape hatch. Group identification was enhanced by the submariner-to-submariner bond between Russell and Burtsev (as well as the seafarers’ bond between them and Stolt representative Graham Mann, whom Russell described as also “being of the same ilk”). The eventual confirmation that the *Kursk*’s hatch dimensions were compatible with UKSRS’s cutting-edge submersible craft, further encouraged those who shared the shared goal of “rescuing people”, and especially Russell, Mann and Burtsev.

Frictions

Inflexibility of Russian organizational configuration: Although the arrival of UK and Norwegian assistance allowed for the widening of the span of control, the additional resources ultimately failed to result in a successful rescue. The narrow span on every lever characterizing the Russian rescue organization might have mirrored the top-down, tightly controlled, bureaucratic configuration of the Northern Fleet at the time. But this configuration was not responsive to the urgent needs of the rescue operation, illustrated by its inability to respond quickly to information requests – presumably, due to the lengthy chain of approval such requests would need to go through as they get passed up the chain of command.

Barriers to communication: One challenge to success was the Russian refusal to co-locate the multi-party command structure on its flagship, the *Peter the Great*, necessitating formal and restrictive ship-to-ship communications. Language barriers complicated matters, as well.

Lack of trust: A salient barrier to a shared purpose and strong commitment was the pervasive lack of *trust*, particularly mistrust of Western intentions by (many of) the Russian naval officers. Trust hinged on an assertion that the Western rescuers would not use the mission for intelligence gathering – an assurance that UKSRS attempted to provide but ultimately failed to convey. It is worth noting

that Russell's personal background in intelligence gathering (as a "former enemy") could have been a serious obstacle⁶.

Barriers to shared purpose: Another challenge was posed by a divide within the Russian leadership. In one camp were the officers and men of the Northern Fleet, best represented by Admiral Burtsev, who shared a deep bond with the trapped submariners and were fully committed to their rescue. In another camp were officials in Moscow and senior naval officers, who had (according to media reports) no interest in seeing the West succeed in a rescue effort where Russia had tried and failed. The division inside the Russian navy did not only delay the deployment of the international rescue forces until it was too late, but also denied the combined (if temporary) organization of the *shared purpose* that might have united its disparate groups.

Cognitive narrowing: According to stress theorists and disaster experts, individuals under stress undergo cognitive narrowing and tend to fall back onto routines while failing to take note of peripheral cues that could help alleviate the source of stress (Mandler, 1982; Weick, 1990). Further, stress is heightened as individuals come closer to achieving their goals before falling short—the smaller the discrepancy between reality and desire, the greater the stress felt by the individual.

Consider the sequence of events among Russian naval commanders at the time of the rescue operation with Norwegian and British forces. Leading up to the moment when foreign help arrived, Admiral Verich had attempted for several days to carry out rescue operations under high pressure, in full view of the Northern Fleet's commanders and sailors, gathered aboard the flagship *Peter the Great*. The submersibles had come tantalizingly close to docking with the *Kursk's* rescue hatch, only to be foiled repeatedly by battery failure, poor equipment performance, and hazardous conditions. As Verich and his team came close but failed to secure their submersibles to the sunken submarine, the Northern Fleet's scrutiny added to the pressure.

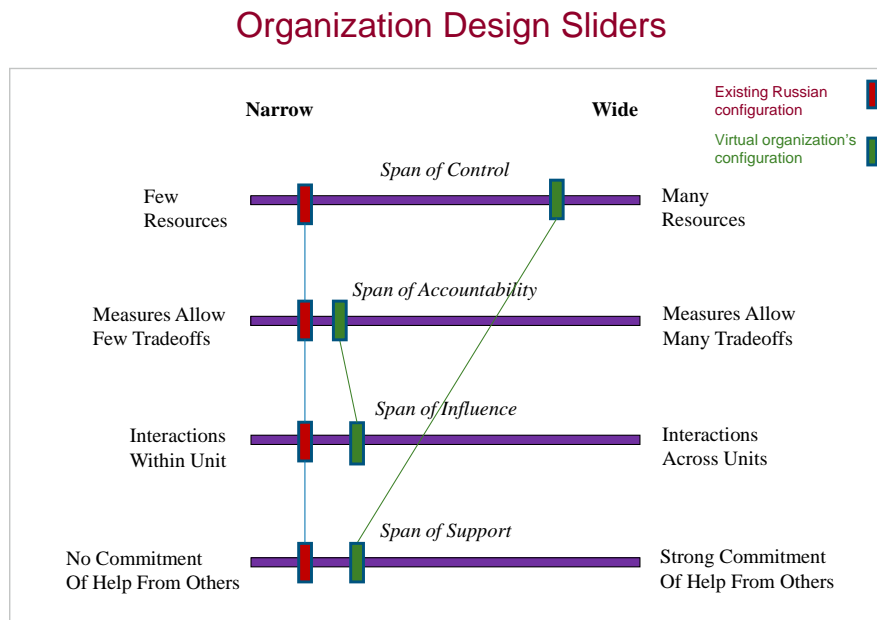
In this state of stress, Verich's cognitive field might have narrowed, to some extent explaining his insistence on continuing with his own routine, refusing to accept 'involvement of strangers' (Turner, 1976) – which would have been a huge deviation from routine, and under the circumstances, an interference with established policy. Instead, as stress theory predicts, he kept reverting to learned routines of behavior. Habitual concern for Russia's pride in the face of Western attention—especially in light of the pressure he faced from his naval comrades looking on—may have also caused Verich to stubbornly devote his now-decreased supply of cognitive attention to saving the Russian submariners without accepting foreign assistance. In sum, cognitive narrowing may help explain Verich's seemingly irrational refusal to accept UKSRS's offer to make use of the LR5 submersible.

Within the rescue organization at large, the effect of stress was to intensify the already hierarchical configuration of the Russian naval organization. Strict vertical lines of reporting were observed in communication and decision making, while lateral communication was scarce. The result was an inability to share information across the organization and reconcile different perceptions of risk and priorities between the Western forces and their Russian counterparts.

The above frictions limited the extent to which the combined organization could expand its spans of accountability, influence, and support in order to make efficient use of the full range of resources available at the scene. **Figure 2** illustrates the unbalanced configuration, which was, ultimately, a recipe for misalignment and resulted in the inefficient use of available resources.

⁶ Observation made by Russell himself in front of a Harvard Business School classroom on 20 February 2014.

Figure 2. The Kursk rescue mission: levers of organizational design for the temporary multiparty rescue organization



Towards pluralistic risk management

Although commitment to others in complex organizations can, according to leadership experts, be engineered, in a multiparty setting it takes particularly skillful and politically astute leadership to foster shared values and goals, to create group identity, to establish trust, and to ensure equity. The *Kursk* rescue case shows that there are significant limits to such engineering, causing unilateral, top-down efforts at increasing the spans of control, influence, accountability and support likely to fail. Multiparty commitments to others, if they are to become established, necessitate (in principle) time, careful groundwork, and a process to guide ongoing, productive interactions. Taking steps to create such commitment, according to Simons (2005) and other organizational experts would involve the establishment of pre-established protocols for communication and routines for action, as well as pre-agreed priorities and shared values to be referred to in specific (e.g. emergency) situations. These protocols would also have to incorporate clear reporting relationships and resource allocations for the multiparty organization, which would have to form on a temporary basis.

However, today's complex firms, joint ventures and other organizational networks are fraught with a significant dispersion in objectives, value systems, evaluative principles, and risk-assessments – as was apparent in the *Kursk* rescue mission as well. The most striking differences concerned, first, the expectations of finding survivors at all and, relating to this, the objectives: whether or not to carry on with the rescue mission. While UKSRS and the Norwegian divers refused to accept a point estimate for the life expectancy of the *Kursk* sailors and were prepared to carry on with the mission until all sailors were confirmed dead, the Russian navy experts estimated the survivors' life expectancy to be 7-8 days and after this time, advised the admirals to shift from rescue to salvage.

This illustrates just how difficult it is to reconcile inherently competing goals and agendas, which are often deeply rooted in diverse value systems, competing evaluative principles and conflicting risk assessments.

An important implication is that risk management, as we have come to know it, requires a rethink. Risk-management blueprints for measurable uncertainties typically follow the cybernetic ideal of control (COSO, 2004; ISO, 2009). That is, they are prescribed for situations in which the underlying risks, organizational tasks and processes are perceived to be familiar, measurable and sufficiently near in time, so that measurement and feedback are available to managers. Under these conditions traditional management control systems, also known in the management control literature as diagnostic, or cybernetic, controls are workable. In this domain, risk managers make progress by expanding the scope and reach of diagnostic controls in order to make more uncertainties measurable, and thus, manageable.

However, our increasingly complex and connected world fosters greater interdependence inside and among organizations - resulting in network organizations, in which diverse evaluative principles coexist in an active rivalry. In such organizations management (and arguably, risk management) becomes the art of facilitating constructive rivalry, with the adherents of the contending frameworks offering reasoned justifications for their course of action (Stark, 2009). The danger is that arguments displace action and nothing is accomplished, as was the case in the *Kursk* rescue mission. Stark proposes an organizational form, which he calls *heterarchy*, as the solution. Neither harmony nor cacophony, heterarchy is an ideal for organized dissonance – a collective sense of timing of when to make temporary settlements to get the job done, with the knowledge that any particular action may not be the ultimate resolution of the inherent disagreements (Stark, 2009:740). Stark argues that heterarchies particularly suit innovative organizations that further simultaneous projects, and disaster-management organizations that need to recover fast and respond quickly in episodes of crisis. In these, top-down patterns of communication perform much more poorly than decentralized networks on tasks of distributed problem-solving. This is possible because effective search for solutions in novel, non-routine situations can no longer be departmentalized, and likewise, information can no longer be compartmentalized (Howitt and Leonard, 2009). But coordination becomes more complex. In such cases, Stark argues, authority must be (and in collaborative, well-functioning heterarchies, has been observed to) spread along lines of lateral accountability: that is, people still report to their "superiors", but are accountable to other work teams. In other words, authority is no longer delegated vertically, but instead emerges laterally, and thus becomes distributed (Stark, 2009: 643).

As we are increasingly confronted by situations, which, by their very nature, do not lend themselves to management by hierarchical authority, so does the ideal of traditional, cybernetic control become impractical and obsolete. The conditions under which cybernetic control is workable (high authority, low ambiguity, high goal clarity) are not present in domains plagued by distributed authority, multiple objectives, multiple evaluative principles, and ambiguity. The ideal type of heterarchy, and its empirical manifestations, the various pluralistic systems we encounter (such as the makeshift rescue organization in the *Kursk* rescue mission) require a *pluralistic control process* that can resolve conflicting objectives, and can arbitrate between different value systems and competing groups of expertise.

Having focused on the empirical manifestations of the cybernetic risk control approach embedded in risk-management guidelines such as COSO's Enterprise Risk Management and ISO 31,000, risk-management scholars have hitherto paid little attention to how organizations can (and do) incorporate pluralistic control principles into their risk-management practices.

Political theorists, however, have long observed the presence of pluralistic control, particularly in adversarial bureaucracies (Dunsire, 1990; Hood and Jones, 1996). In fact, several descriptions and prescriptions exist for non-cybernetic, pluralistic control, which is also referred to as *collibration* in political science (Dunsire, 1990).

According to Hood and Jones (1996), for example, the following techniques help managers in their efforts to control conflicting agendas:

- Encouraging explicit institutionalization of rival agendas – with institutionalized champions for each of the rival agendas.

- Organizing around values rather than functionalized responsibilities.
- Developing incentive structures which reward confrontation and encourage value champions to take extreme positions, and staging regular, but not continuous adversarial exchanges.
- Ensuring second chances for failures – mechanisms for wiping the slate clean, so that neither party lose clout or credibility and the adversarial viewpoints can be brought into exchange again.

These techniques are applicable in control situations where control cannot be predicated on a general and stable consensus on goals. The solution, Hood and Jones argue, is a periodically changing equilibrium brought about by equal pressure coming from the opposing forces, and a balance-tipping process. In sum, when neither objectives, nor measures are clear, managers have to “collibrate”, that is, they regularly (but not constantly) need to bring opposing forces into dialogue with one another.

In addition, management control researchers have been exploring how particular tools and technologies, such as costing and performance measurement systems, are involved in ongoing contests and struggles as various organizational groups further particular interests and values (Nahapiet, 1988; Briers & Chua, 2001; Andon, Baxter and Chua, 2007; Chenhall, Hall and Smith, 2013).

Chenhall, Hall and Smith (2013) develop the concept of *compromising accounts* to describe the role that accounting tools and technologies (such as performance measurement systems) can play in facilitating the requisite (if temporary) compromises that enable heterarchies to function. Their field study of a non-governmental organization highlighted very real tensions among various interests, which were exacerbated by limited resources (in terms of money, time and space) and in that sense, strongly echoes the pressures present in the *Kursk* rescue mission. Their case describes a hierarchy in action, with episodes of both productive and unproductive discussions – some leading to compromise and action, others ending in ‘breakdown’. What made the difference was the design of the accounting tool implicated in the control process. Chenhall, Hall and Smith also illuminate some of the design characteristics of accounts that can productively manage tensions between multiple evaluative principles. First, such designs involve ‘imperfection’, that is, a process of ‘give and take’ that ensures that no single evaluative principle comes to dominate others (Chenhall, Hall and Smith, 2013: 269). This is in line with Hood and Jones (1992)’ argument for ensuring second chances for failures, but clarifies what kind of mechanism can achieve that – certain kinds of accounting practices that make visible (however inaccurately) what’s important to different organizational actors. The resulting “concurrent visibility” serves to enable productive discussions and eventual compromises. Chenhall, Hall and Smith further caution that debates over the mechanics of accounting practices can be unproductive, whereas debate focused on the principles underlying each account can help integrate the various evaluative principles at play.

The above set of techniques and conditions (deliberate, tolerated ‘imperfection’; concurrent visibility; debates focusing on principles, not mechanics) are by no means complete – in line with Chenhall, Hall and Smith (2013), we call for further research to examine what tools, processes and structural arrangements can bring together (or indeed push apart) organizational groups with different evaluative principles.

Our analysis of the failure of the *Kursk* rescue mission highlighted another condition (not mentioned in the above literatures) that seems critical in pluralistic risk management: a wide span of support, predicated on trust, equity and group identification among the actors.

Future research in risk and disaster management can usefully explore organizational structures that can resolve evaluative dissonance, if only temporarily, and processes that enable repeat-resolutions to take place. Incorporating relevant insights on pluralistic control, collaborative heterarchies and collibration into the risk-management domain will thus provide us with the necessary foundations for *pluralistic risk management* – a new risk-management approach that would be suited to settings characterized by ongoing ambiguity among coexisting principles.

Exhibit 1 The *Kursk*'s Position and Interior Following the Explosions

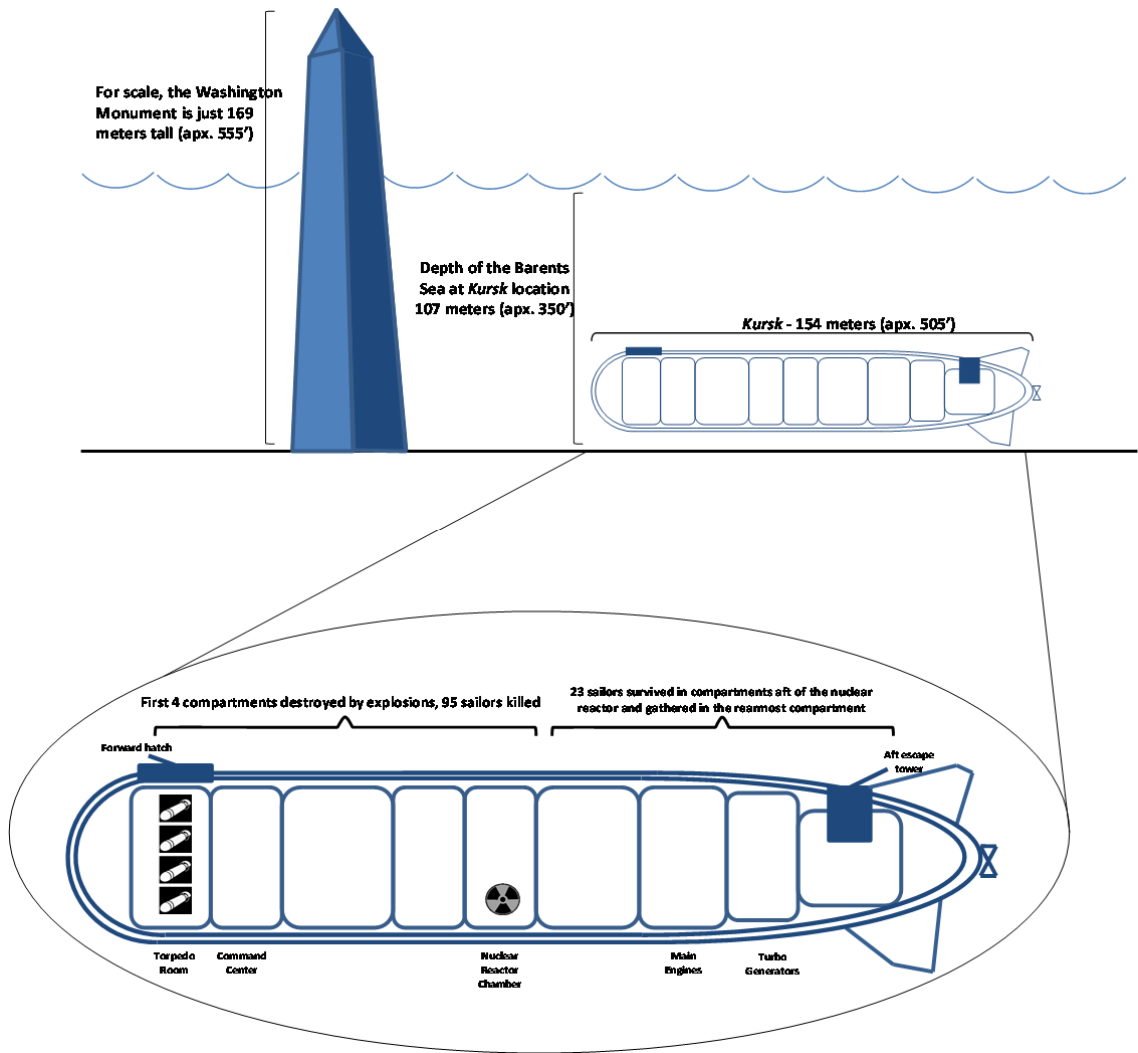


Exhibit 2 Timeline and summary of key events

Saturday August 12, 2000

- Twin explosions sink the *Kursk* at 11:30 during a naval exercise. Twenty-three survivors gather in the ninth, rearmost compartment of the submarine.
- At 23:30, the Northern Fleet raises alarm; Russian search and rescue services (SRS) mobilize.

Sunday August 13, 2000

- Russian forces identify the *Kursk*'s location datum; the submersible *Priz* attempts to dock with the *Kursk* but is unable to latch onto the sunken submarine before battery power runs out.

Monday August 14, 2000

- Admiral Skorgen, suspecting offers assistance to Admiral Popov via direct military phone line.
- Russian television announces to the public that the *Kursk* had sunk in the Barents Sea.
- Commodore Russell begins contingency planning for UKSRS to aid in rescue efforts.
- The Norwegian and British governments formally extend offers of assistance with the rescue.

Tuesday August 15, 2000

- In Moscow, senior Russian officials debate whether to accept the Western offers of assistance.
- Hazardous weather force Russian SRS (led by Admiral Verich) to temporarily suspend rescue operations.
- Igor Baranov, the construction director of the *Kursk*, speaks at a press conference and estimates that the *Kursk* sailors could survive "five or possibly six more days."

Wednesday August 16, 2000

- Admiral Popov officially accepts the Norwegian offer of assistance and requests deep-sea divers.
- Russian senior naval officials, through NATO, accept the British offer of assistance.
- Commodore Russell, having already made preliminary plans, begins transport via Royal Air Force to Russian Northern Fleet headquarters in Murmansk. The RAF plane is denied entry to Russian airspace and Russell is forced to disembark in Norway.

Thursday August 17, 2000

- Russian SRS—now with its best submersible pilots on hand—resumes rescue efforts.
- The *Normand Pioneer*, bearing the LR5 and the rest of UKSRS, sails from Trondheim.

Friday August 18, 2000

- Russell joins the *Normand Pioneer* via Norwegian army helicopter transfer.

Saturday August 19, 2000

- The *Normand Pioneer* and *Seaway Eagle* take position 14 nautical miles from the *Kursk* site.
- UK, Norwegian, and Russian commanders meet for the first time aboard the *Seaway Eagle*, where Admiral Verich refuses use of the LR5.
- Later in the day, Admiral Burtsev visits Russell onboard the *Normand Pioneer* and contradicts Admiral Verich by urging UKSRS to begin operations and by promising to bring requested Russian personnel.

Sunday August 20, 2000

- The *Seaway Eagle* is ordered by the Russians to move to the *Kursk* location, while the *Normand Pioneer* is requested to remain away.
- Norwegian divers survey the site and inspect the *Kursk*. The divers report that the hatch appears undamaged and recommend that the LR5 be deployed to attempt rescue.

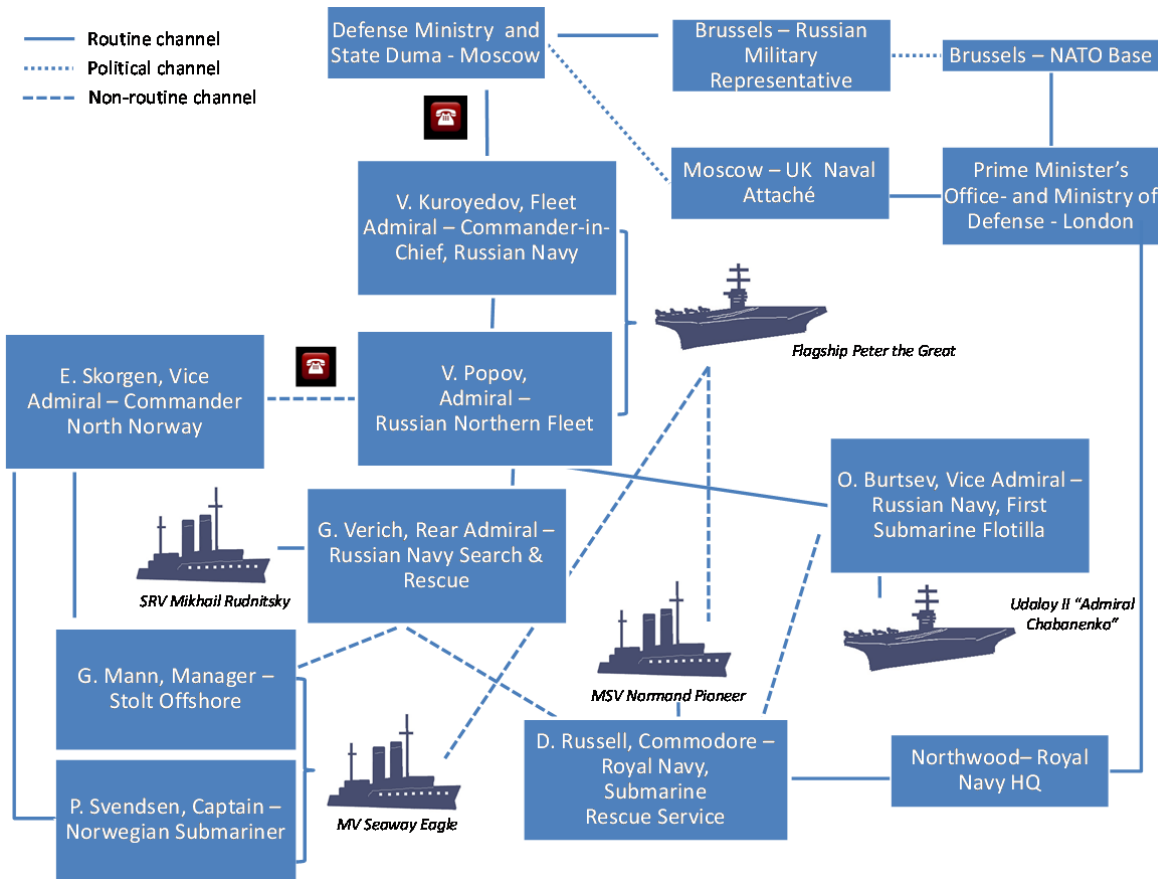
Monday August 21, 2000

- The *Normand Pioneer* is finally ordered to approach the *Kursk* site. But before LR5 can be deployed, divers confirm that the compartment has been flooded. There are no survivors.

- Tuesday August 22, 2000

- Commodore Russell is invited aboard the Russian flagship Peter the Great.

Exhibit 3 Command and Control Arrangements of the International Rescue Mission



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